

2010

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[NSF SCISIP JAPAN AND SINGAPORE RESEARCH EXPERIENCE JOURNALS]

These research experience journals contain the narratives of the lived experiences of and the lessons learned by our graduate student mentees, who actively participated in the actual planning, management, and conduct of surveys of knowledge producers in selected Japanese and Singaporean research institutions during Summer 2010. The mentoring experience and the research endeavor described in these journals are funded by two U.S. National Science Foundation grant awards (SBE 0830109 and SES 0938298). These mentees were mentored and trained by Drs. Marcus Antonius Ynalvez, Ruby A. Ynalvez, John C. Kilburn, and Yoshinori Kamo. In a way, these journals were written to encourage and inspire present and future students from marginalized groups and minority populations to seriously consider pursuing activities and careers in techno-scientific fields, and thus serve as a means to diversify both the national and the international scientific communities.

A Privileged View

(by Susan Marie Aguilar)

Though I was too busy working with our research team to take the bullet train [dangan ressha (弾丸列)] out to see Mt. Fuji on my trip to Japan; I have, however, been mountain climbing and I know a privileged view when I see one. This is what it felt like to visit the research laboratories at University of Tokyo (Todai) and Tokyo Institute of Technology (Tokodai) and listen to world-renowned professors and promising graduate students share their educational and research activities, priorities, and insights.

I am Susan Aguilar, a graduate student and research assistant at Texas A&M International University in Laredo, Texas. As a non-traditional student (with a husband, family, and more than 40 years of life experience), I well recognized what a great opportunity I was being given when I was asked to assist in a sociological research study in Japan. What I did not fully realize was how amazing the view would be from where I would stand. I could not help but be impressed by the knowledge base, the culturally unique arrangements of the research laboratories within the Japanese university systems, and the traditions that contrasted richly with the sophisticated technology for which Japan is well-known.

In preparation for the trip, I spent two semesters immersing myself in materials and readings in the sociology of science and technology, including a data set acquired by my mentors and the Taiwan survey team. Japan, Singapore, and Taiwan comprise the study locations of the present research, "Transmission of Tacit Skills in East Asian Science Programs," as we seek to identify characteristics of graduate science mentoring, especially as they relate to tacit skills -- the skills acquired by hands on training, the skills too intricate and multi-dimensional to learn simply from textbooks and literature. In this process, I



learned to be especially aware of the components of scientific research that are less objective, less predictable -- components such as networks, collaborations, gender relations, mentor involvement, time investment, usage of information and communication technologies, perceptions, and degrees of immersion in one's work.

Often, our understanding of our particular learning environment limits us to a view of that situation as "normal." It is when we look further and see what "normal" is to other groups that we begin to open our minds to innovations that might benefit or inspire our previous environment. In discussing the laboratory environment with students in the United States, and with students in Japan, I heard two different descriptions of the average laboratory, as well as different ways of looking at productivity, opportunity, and time investments. Some of the main qualities I noticed in Japanese university laboratories were distinct hierarchy, long work hours and work week, great homogeneity of culture, and intense immersion in research. Each system has strengths and weaknesses from which we can all learn as we evolve into more sophisticated and efficient systems.

As I was discerning career decisions, one of my mentors informed me that I would know after these international opportunities if research was the route I wanted to take. It was such a striking opportunity to join the sociological research team in Japan; I grew fascinated by the history of Japan, its culture, traditions, the unique challenges that Japan faces as a country, and the innovative ways in which they are addressing these issues. Just as I've found that, in Japan, what looks like a very crowded elevator, or a crowded subway still has room for at least one more with some maneuvering, I have found that it is worth putting myself forward when it is the most efficient way to get to the next place. This research is the vehicle that not only allows me to progress in my education, but it allows me to work toward making a contribution to knowledge and science. And, with the data our team has collected and is collecting with hundreds of interviews in our survey, and with the memories, recollections, and journal entries, I am now well equipped to proceed toward these goals. I have developed a genuine interest in pursuing this path and my mind has been truly inspired by my research experience in Japan.

I would like to give special thanks to the National Science Foundation Science of Science and Innovation Policy (NSF SciSIP) program (Award # SBE 0830109 & SES 0938298), The University of Tokyo, Tokyo Institute of Technology, Texas A&M International University, Mr. Yuichi Kageto, Dr. Yoshinori Kamo, and, most of all, my esteemed mentors, Drs. Marcus Antonius Ynalvez and John C. Kilburn.

- SMA

The Making of a New Set of Aspirations

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My name is Claudia Garza-Gongora and I am a graduate student at Texas A&M International University in Laredo, Texas with a major in biology. With the support of the National Science Foundation, Science of Science and Innovation Policy Program I had the opportunity this year to participate in a collaborative research project between Texas A&M International University and the University of Indiana, along with collaborators from the National University of Singapore and Nanyang Technological University. The focus of this research is to understand how future scientists and research professionals are trained, socialized, and mentored in the graduate science programs of Singapore.

Before joining this project, my academic career consisted of extensive biology courses and laboratory work. This project has greatly expanded my horizons as a biologist and, in turn, afforded me the rare opportunity to appreciate and engage in discipline-specific tactics from the more diverse perspective of a sociologist. This research has allowed me to cross the boundaries of my field of study which is biology, and thus has permitted me to integrate two disciplines -- biology and sociology. My participation in this project began in January of 2010. Through weekly Friday meetings, my mentors, team mates (Susan Marie Aguilar, Andrea D. Beattie, and Arturo Gonzalez, Jr.) and I would participate in and engage on deep discussions regarding our research project -- its objectives, theoretical framework, hypotheses, research design, and analytical method. We also practice our interview skills, and absorb everything we could about Singapore. As the date for our trip grew closer, our apprehension and exhilaration levels soared. Once we landed in Singapore and made our way to our housing accommodations, the stress began to melt away. This chic, prosperous country was infinitely more than I could have ever expected!



After a day of rest from our very long flight, we drove “full speed ahead” into our project as we met with our counterparts and began planning our week. Our Singapore graduate student counterparts, all from the National University of Singapore’s Department of Communications and New Media -- Rachel Amtzis, Catherine Candano, Cheryll Soriano, and Dazzelyn Zapata -- were amazing; along with their current course and work load, they assisted us in assuring our survey objectives were both met and completed. Working and learning from them was extremely gratifying. We spent our days recruiting, contacting, scheduling, and conducting interviews.

Because Singapore is arguably the most culturally diverse country in South-East Asia, the majority of the graduate science students we interviewed were international students. Listening to and learning about these students' cultures, their reasons for training to become scientists, and their thoughts on how to improve the Singaporean scientific community and graduate science program were very insightful. Examples of which are the recruitment of international scientists and professors, and more female recruits to fill in faculty positions. There was also mention of Singapore's thrust toward the free interaction amongst scientists and knowledge producers such that newly built laboratories are designed to maximize face-to-face interaction amongst scientists within the same building.



I am extremely grateful to have had the opportunity to collect the data mandated by our research project objective, and I am certain that many useful applications to knowledge production and international graduate science training will be gained from the presentations and publications that come out from this research project. I am hoping that one day this knowledge will be applied in my own predominantly Hispanic community where a Mexican American woman's aspirations and mind-set do not generally embrace science, research and numbers. My personal goal is to contribute, in my own small way, to the diversification of the U.S. scientific community by taking the lead in engaging and involving minorities of Hispanic backgrounds in techno-scientific activities so that they are able to expand their horizons, and gain confidence and courage to break the stereotypes that they have been hitherto labeled with.

Don't get me wrong. Jumping in head first into another field was not an easy task. Having to do it in another country half way around the world can be extremely intimidating especially for someone like me, who has been socialized to aspirations and expectations that do not typically emphasize science and research. But again, I had great mentors, supportive research team mates, and hardworking counterpart graduate-student interviewers from NUS. Drs. Marcus Ynalvez and Ruby Ynalvez were there every step of the way to provide the guidance and support needed to excel. My TAMIU team mates and travel companions made this trip not only enlightening, but entertaining as well. Thanks Susan, Arturo, and Andrea! To our NUS counterparts, Rachel Amtzis, Cheryl Soriano, Catherine Candano, and Dazzelyn Zapata, thank you for a wonderful experience and for helping us navigate through the beautiful and sprawling campuses of NUS and NTU. And, last but not least, to the U.S. National Science Foundation, Science of Science and Innovation Policy (NSF SciSIP) program for the research grants which made all this socialization experience possible. -- CGG



My Journey Across the Globe

By: Andrea D. Beattie

Background

My name is Andrea Deyanira Beattie, and I have been recently admitted into the master's program at Texas A&M International University (TAMIU) in Laredo with a major in political science a minor in sociology. I was born in Eagle Pass, Texas but raised in Laredo, Texas. I am currently 21 years old. Both my father and mother's parents were born and raised in Mexico, but both my parents, Salvador and Sandra Beattie, were born in the United States. Living in a border city to Mexico, I am constantly exposed to a bicultural environment that is predominantly Hispanic. I am grateful for and of my heritage, and owe my current educational success to the high value of education passed down to me from my parents. My three brothers, Luis, Gabriel, and Eduardo Beattie, have been the greatest source of inspiration in my life, and their constant support drive me forward to take courageous leaps into the unknown.

Project in Brief

Through the financial support of the National Science Foundation, Science of Science and Innovation Policy (NSF SciSIP) program, I had the opportunity in the summer of 2010 to travel to Singapore with my professors Drs. Marcus and Ruby Ynalvez, and three other TAMIU graduate students on an international research project. This project examines the graduate science mentoring and training practices in the East Asian region. Data collection consisted of quantitative surveys, qualitative interviews, and 7-day/24-hour time diaries. As a member of the NSF SciSIP Singapore survey team, my role was to assist in managing and administering these surveys and interviews to graduate student respondents. On the one hand, the qualitative interviews were extremely insightful for me as an interviewer and junior research because this method allowed me to understand the graduate science programs in more depth, and as a political science major, my interviews generated many potential questions for my own future research. On the other hand, the quantitative data collected holds a great deal of potential in unraveling important patterns and trends within Singaporean and among East Asian graduate science training systems that can be used to inform graduate science programs in the U.S. and around the globe. I am eager in assisting with the data input, validation, and analysis; and I anxiously await the results of our study.

Initial Feelings

Time seemed to grow eternally slower as we neared our departure date for Singapore. Constantly, I was rocking backwards and forwards between emotions: excitement and fear. I was excited about traveling to Southeast Asia, where I would experience the many unique cultures, religions, languages, and lifestyles in Singapore. I was also excited about the opportunity to participate in a science studies research



in which I would manage and conduct surveys and interviews with a group of like-minded people for the very first time. On the other hand, I could not suppress the occasional feeling of fear. Never before had I been so far away from home and for such a long period of time. Was I going to find everything I needed? Were the people going to be friendly and helpful? What if I get lost? Could I find my way? After a while though, these anxieties began to transform into excitement. Like a snowball growing larger and larger and steadily gaining momentum as it rolled down a mountain, my excitement reached its pinnacle a few days before our flight. I had to constantly remind myself to get some sleep so that I could be at my best upon our arrival, but it was not easy. As the team began making final arrangements and I finished the last of my packing, my family grew more and more somber about my leaving. Although I knew I would miss my family and friends, I knew this trip would change me, and so it did!

Singapore Experience

Singapore is a melting pot of cultures. It was normal to be different (*and I think it is the diverse backgrounds of talents interacting closely that make Singapore science system not only strong but innovative*). I was able to quickly feel comfortable and began to appreciate the unique characteristics of



the individual cultures. Most of our respondents were international graduate students from other parts of the world including: China, India, Indonesia, Malaysia, Taiwan, and Thailand. Some of the observations I made while interviewing respondents include the value of hard work in laboratories, and that of generating knowledge and publishing this in prestigious outlets for both mentors and graduate students in East Asian graduate science programs. Their schedules were so tightly packed with their laboratory work and research, most even worked on weekends. This is just one example of the many unique values and traits of the respondents in our study location. On the other hand, I also learned about the detailed and intense planning required in organizing an international research project.

Conclusion

Now that my trip is over, I have come to realize that there was absolutely no reason to be worried about traveling to Singapore. It really did not take long to make Singapore feel as homely as home. Despite being one of a few Latinas, there were so many different ethnicities and nationalities from all over the world in Singapore that I learned to appreciate my own unique heritage even more. I hope that in the future, I may be able to learn more about different cultures considering the United States is the biggest melting pot of them all. It was through my experiences in Singapore, that I am now able to consider graduate schools abroad for my doctoral studies. Working on this project has not only taught me to appreciate different cultures, but I have also learned to value hard work, team work, collaboration, professional networking, and careful planning and organization. Working in conjunction with TAMIU and NUS students not only showed me how rewarding an experience it is to work together with a hardworking group for a similar goal, but some of the ties I established will exceed the time frame of this project. The hands-on experience I have gained is so valuable for my graduate education because I

learned scientific research skills that cannot be acquired through textbooks or traditional classroom interaction. To be working with such insightful professionals has been my greatest reward this summer.

Acknowledgements

I would like to thank the NSF SciSIP program for funding this project (Award #: SBE 0830109 & SES 0938298). I would also like to extend my warmest thanks to Drs. Marcus and Ruby Ynalvez, for inviting me to be a part of this project as well as helping me along the way. I would like to recognize Drs. T.T. Sreekumar and S. Amir for assisting us in finding our way around the beautiful campuses of NUS and NTU, respectively. Cheryll Soriano, Dazzelyn Zapata, Catherine Candano, and Rachel Amtzis, our NUS counterparts, we would have been lost without you. It was through your hard work and dedication that we were able to get all the graduate student surveys and interviews done. Personally, I learned so much from all of you. Finally, Susan Aguilar, Claudia Garza-Gongora, and Arturo Gonzalez, Jr., it has been my greatest pleasure working with all of you. We made a powerful team, didn't we?

-- ADB